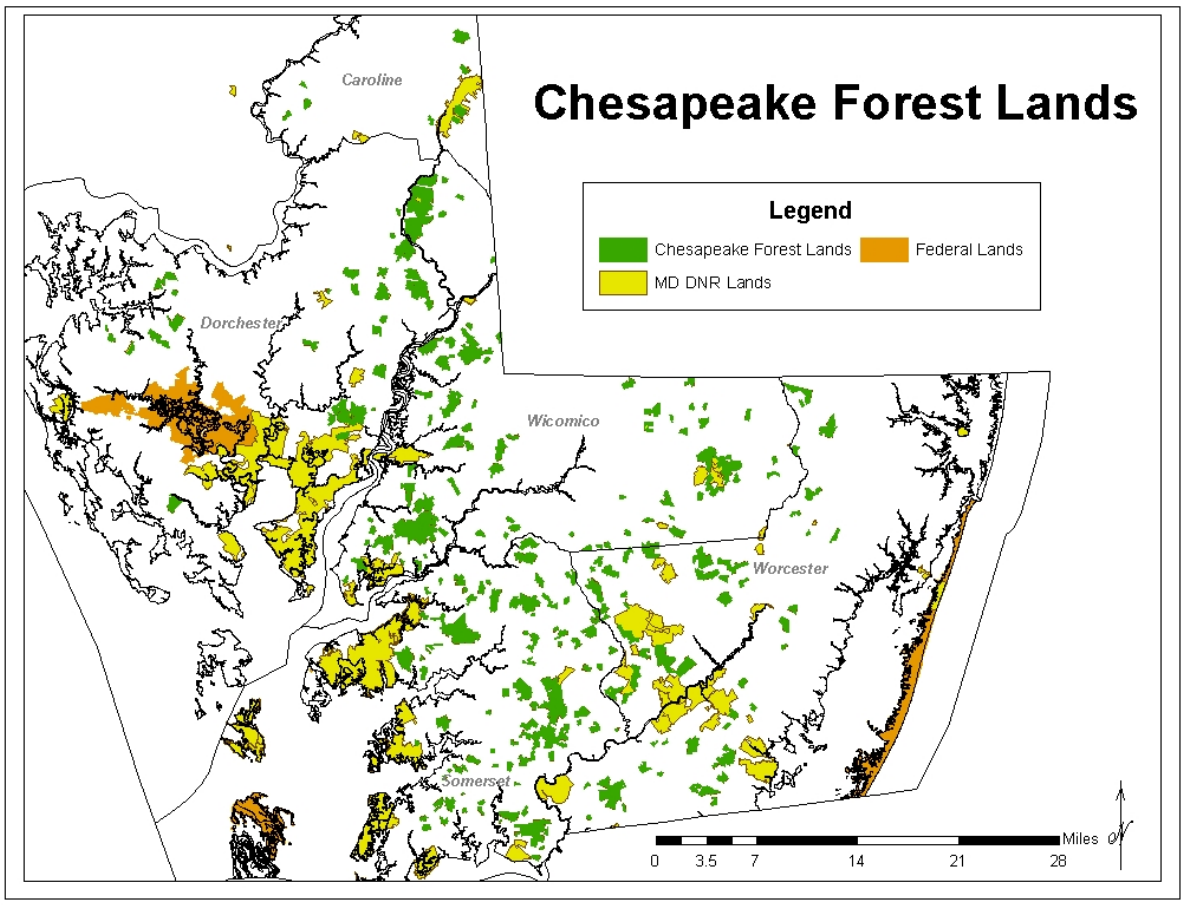
Chapter - 3
Chesapeake Forest - Resource Characterization

Chesapeake Forest Lands cover approximately 58,447 acres of land involving some 460 original ownership tracts in 238 contiguous land parcels scattered across 5 counties on the Lower Eastern Shore of Maryland (Figure 9).

Figure 9. Chesapeake Forest Lands on the Lower Eastern Shore of Marvland.



1. The Forests

Young loblolly pine forest, mostly established since the early 1980's are what characterize a high proportion of Chesapeake Forest Lands, this is illustrated in Table 8. Mixed pine and hardwood forests still occupy some of the lands, and many riparian areas and flood plains contain stands of mixed hardwoods. In general, the mixed pine-hardwood and hardwood stands are older, mature forests. Table 8 also provides a habitat diversity matrix that provides a current baseline from which future changes in age structure or forest type diversity can be assessed for potential habitat or biodiversity effects.

Table 8. Forest Diversity Analysis: Acres of forest type and forest structure by structural groups, with percent of total area in each forest type/ structure group combination.

Structure stage	Open	Sapling	Growing	Maturing	Mature	Big Trees	Uneven	Total Area
Forest type	0 - 5 yrs	5 - 15 yrs	15 - 25 yrs	25 - 35 yrs	35 - 50 yrs	50-75+ yrs	Aged	
Loblolly Pine	4,320	17,668	15,454	6,275	2,449	605	0	**46,771**
(percent)	7.39%	30.23%	26.44%	10.73%	4.18%	1.03%	0%	**80%**
Mixed Pine/ Hardwood	1,902	177	125	108	271	1,027	1,709	**5,319**
(percent)	3.25%	0.3%	0.21%	0.18%	0.46%	1.76%	2.92%	**9.1%**
Mixed Hardwoods	83	267	26	91	1,241	1,653	1,731	**5,092**
(percent)	0.14%	0.46%	0.04%	0.16%	2.12%	2.83%	2.96%	**8.7%**
Marsh/Field /Power lines	1,265	0	0	0	0	0	0	**1,265**
(*percent)*	2.2 %							**2.2%**
Total	**7,570**	**18,112**	**15,605**	**6,474**	**3,961**	**3,321**	**3,440**	**58,447**
(percent)	***13%***	***31%***	***26.7%***	***11%***	***6.7%***	***5.7%***	***5.9%***	***100.00%***

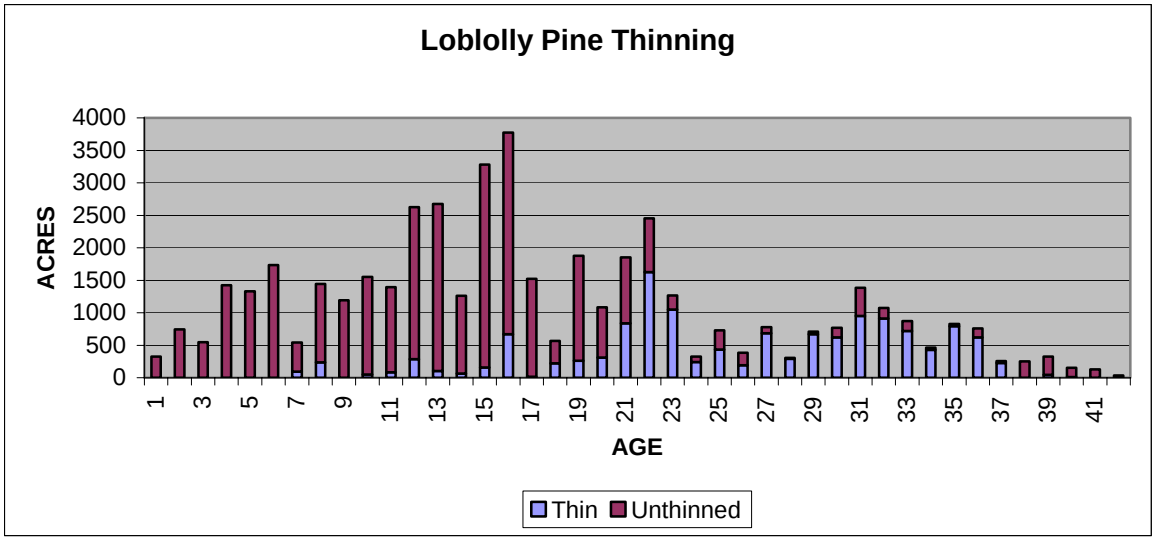


Figure 10. Age distribution of pine plantations on Chesapeake Forest Lands, indicates stands thinned based on 2004 data.

Figure 10 shows that there will be modest acreage of loblolly pine in the age classes that might be available for final harvest in the next 15 years. Since the first thinning of pine plantations is usually scheduled some time around age 14 to18, there are many acres eligible for thinning now and that area will increase over the near future. For the stands selected for longer rotations, second thinnings will generally occur in the 25 to 35 year age range, so these operations will increase fairly significantly over the next decade.

2. Forest Production

The Chesapeake forests have been managed for industrial forest production for decades, and have been a major contributor to the region's forest products industry. Five pine sawmills and two pulpwood-chipping operations provide an outlet for timber from local forests, which are largely isolated from outside markets by water and distance.

The total Chesapeake Forest Project makes up about 10% of the productive forests in the 5 counties (Table 9), and in the past, produced 15-20% of the annual timber harvest in the region. Because most of the plantations are now young, that level of contribution cannot be maintained over the next decade.

Table 9. Chesapeake Forest Lands as percent of the forest area by county.

County	*Total Area acres	*Total Forest acres	Chesapeake Forests acres	CFL as % of Total Area	CFL as % of Total Forest
Caroline	208,600	62,900	1,254	0.6%	2.0%
Dorchester	356,900	137,600	11,221	3.1 %	8.1%
Somerset	209,400	87,800	17,282	8.3%	19.7%
Wicomico	241,400	115,400	15,722	6.5%	13.6%
Worcester	302,900	156,700	12,969	4.3%	8.3%
Totals	1,319,200	560,400	58,447	4.4%	10.4%

*Source: USDA Forest Service-Forest Statistics for Maryland: 1986 and 1999

3. Water Quality

Water quality in the Chesapeake Bay is a major environmental concern, fueled by the fact that nutrient contributions from airborne pollution as well as local development and agriculture have been cited as a basic cause of water quality decline in recent decades (Figure 11). The Chesapeake Forest management plan focuses on several aspects of this issue, including the expansion of water quality and wildlife buffers to remove as much nutrients as possible. This can be accomplished through the maintenance of healthy, growing forests that will maximize nutrient uptake and by controlling other management impacts on soils where the risk of direct nutrient transport into shallow groundwater or surface waters is high.

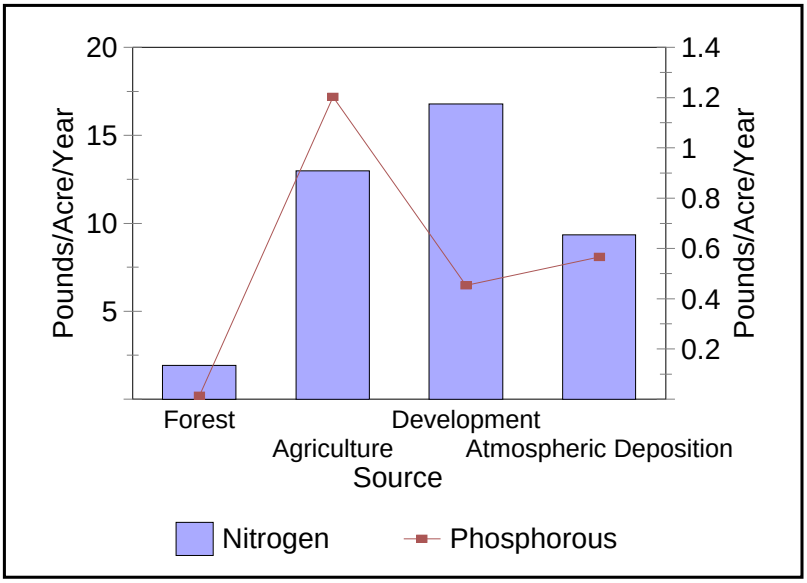


Figure 11. Estimated contribution of nitrogen & hosphorous to tidal waters from land uses in the Chesapeake Bay. Source: EPA

4. Watersheds

Chesapeake Forest Lands contribute to 23 watersheds draining into the Chesapeake Bay, and comprise 10 to 25% of the forestland within many of the drainages identified as high priority for conservation action by the Maryland Clean Water Action Plan (Table 10).

Table 10. Maryland's Lower Eastern Shore Watersheds, Priority Rank, Percent Forest Cover and Percent of Forest Cover on Chesapeake Forest Lands

Watershed	Rank*	Forest Area	Total Area	% of WS in forest	Chesapeake Forest Ac.	CF as a % of forest
Marshyhope Creek	1	29,751	78,727	38%	5,450	18%
Lower Pocomoke River	1	57,456	101,315	57%	6,800	12%
Upper Pocomoke River	1	50,770	95,550	53%	5,266	10%
Wicomico River Head	1	10,395	24,941	42%	780	7%
Lower Wicomico River	1	27,914	79,771	35%	4,206	15%
Upper Choptank	2	48,790	163,447	30%	302	1%
Manokin River	2	27,577	74,312	37%	5,915	21%
Nanticoke River	2	47,569	127,594	37%	8,162	17%
Wicomico Creek	2	10,753	19,963	54%	1,450	13%
Transquaking River	2	24,529	70,933	35%	1,376	6%
Nassawango Creek	3	31,376	43,877	72%	2,350	7%
Big Annemessex River	3	9,424	29,819	32%	599	6%
Dividing Creek	3	31,112	39,700	78%	4,728	15%
Pocomoke Sound	3	14,926	46,061	32%	3,950	26%
Lower Choptank	3	29,431	195,690	15%	55	0%
Fishing Bay	4	40,307	130,088	31%	1,959	5%
Little Choptank	4	23,734	69,683	34%	1,621	7%
Monie Bay	4	9,924	29,580	34%	2,013	20%
Chincoteague Bay	0	17,478	89,300	20%	1,194	7%

- Maryland's Clean Water Action Plan ranks watersheds on several criteria. This rank reflects priority for prevention of nutrient pollution, which is a major benefit from sound forest management. (1= highest) Note: Acres and Percentages are rounded to the nearest whole number.

5. Soils

The region features flat topography, near-sea level elevations, and poorly drained soils. Soils are naturally low in fertility, but soil erosion and sediment runoff is seldom a problem, given reasonable management care. Seasonally wet conditions affect the timing and type of management activities. In the process of plan development, the soils in the region were classified into 5 Soil Management Groups (SMG), based on soil characteristics directly affecting forest management. (See Appendix: D for a listing of soil types by soil management group and a listing by county of symbols used by soil survey reports.) ***The 5 Groups (SMG's) were defined as follows:***

- SMG 1 - wet soils with firm sub-soils that can physically support machines when wet.
- SMG 2 - wet soils with non-firm sub-soils that cannot support machines when wet.
- SMG 3 - soils that are less wet than either 1 or 2; highly productive forest sites.
- SMG 4 - very sandy, often dry soils that are generally not highly productive forest sites.
- SMG 5 - very wet, low-lying soils that are too wet for forestry operations.

To facilitate plan development and future management, digital soils data were prepared for all the areas where Chesapeake Forest Lands occur. Digital soils data were available from USDA Natural Resources Conservation Service in Dorchester and Worcester Counties, but existing soils maps in Caroline, Somerset, and Wicomico Counties were digitized under contract with Towson University. In the next few years NRCS will publish a new survey for Wicomico County that can be incorporated into the management data set, but for now, the older soil boundaries provide a very useful planning tool.

When the current land cover was compared to the soil survey data, it was clear that the majority of Chesapeake Forest Lands occur on SMG's 1 and 2 (Table 5). It was also clear that the most favorable land for field activities during wet weather (SMG 3 and 4) make up a fairly small proportion of the pine plantations, so scheduling field activities must remain flexible enough to accommodate unusually long periods of wet weather.

Table 11. Current Forest Cover by Soil Management Group

SOIL MANAGEMENT GROUP	CURRENT COVER - ACRES						
	Loblolly Pine	Mixed	Hardwood	Cutover	Open	Un-known	Total
0 - Not Rated	90	3	16	14	15	68	205
1 - Wet, firm sub-soils	19,365	985	1,203	720	1,168	759	24,200
2 - Wet, non-firm sub-soils	16,616	1,119	1,213	1,096	839	340	21,223
3 - Most favorable	3,274	137	355	164	289	101	4,320
4 - Sandy, dry	3,425	123	394	57	131	136	4,266
5 - Very wet, floodplains	423	54	514	126	134	857	2,109
TOTALS	43,194	2,421	3,696	2,177	2,576	2,261	56,325

Another cross-comparison was done to see how well the current identification of Water Quality Areas and buffers matched up to the soil surveys. It indicates that there is considerable work to be done in the field to identify and classify additional riparian forest buffers and wetlands correctly (Table 12). It may also require that the SMG classifications are revisited to assure that the proper soils are included in each. The distinctions between many of these soils are fairly slight, and there is often little or no slope or topographic position to help assure accurate identification and classification, so experienced field personnel and accurate assessments are vital to the process.

Table 12. Soil management groups for Riparian Forest Buffers/Wetlands

Soil Management Group	Current Identification		
	Not rated	Riparian Forest	Wetland
0 - Not Rated	110	87	15
1 - Wet, firm sub-soils	24,124	298	449
2 - Wet, non-firm sub-soils	20,121	438	632
3 - Most favorable	4,103	195	40
4 - Sandy, dry	3,695	282	77
5 - Very wet, floodplains etc	1,195	857	708
Total (includes roads, etc.)	53,349	2,157	1,920

6. Management Areas and Units

To facilitate management planning of Chesapeake Forest Lands, the properties were grouped into Management Areas and Management Units. A Management Area is defined as the geographic area within the boundaries of a county. Within each of these management areas, management units were defined as contiguous properties made up of formally individually deeded CFL tracts that make sense to be managed as one unit. This involves some arbitrary decisions, since there are often minor gaps of private ownerships within individual units. The resulting management units provide a very useful tool for developing individual operating plans that then comprise the annual work plan on the forest. Table 13 reflects the identification of the 5 Management Areas and 187 Management Units.

Table 13: Chesapeake Forest Land – Management Areas & Units

Management Area	Individual Deeded CFL Tracts	Management Units	Total Acres	Loblolly Pine Acres
Caroline	9	7	1,254	935
Dorchester	51	28	11,221	8,630
Somerset	174	55	17,281	14,391
Wicomico	165	55	15,722	12,662
Worcester	61	42	12,969	10,153
Totals	**460**	**187**	**58,447**	**46,771**

One of the management challenges inherent in the land base is that, in spite of the attempts to create the most manageable units, there are many small, isolated properties. There are 27 management units that are less than 50 acres, and 6 that are less than 30 acres in size (Table 14).

Table 14. Management Unit Statistics by Size

Size Class	Count	Ac Sum	Ac Avg.	Min	Max
0-49	27	961	35.6	10	49
50-99	38	2,720	71.6	51	99
100-149	24	2,852	118.8	101	149
150-249	36	6,691	185.9	150	239
250-499	34	12,502	367.7	255	489
500-999	16	11,386	669.8	528	946
1000-1999	9	13,350	1,483.3	1,160	1,932
2000+	3	8,157	2,719.0	2,057	3,403

Note: Table does not include road, railroad, or transmission line acres.

Seventy-nine (79) of the management units on Chesapeake Forest are less then 150 acres in size. Most of these areas adjoin or are surrounded by agricultural or developed land.

Adjoining land uses such as agriculture or development may constrain forest management activities such as prescribed fire. These forests provide needed habitat and esthetic diversity as well as the opportunity for water quality improvement projects to buffer the impact of surrounding lands.

The number of small parcels and their inter-relationship with adjacent private landowners, will combine to make the management of these lands very comparable to that which is experienced by many non-industrial private landowners. The Department must weight the

effects of various management activities as they may effect adjoining properties and seek to always maintain good community relations with neighbors.

Private forest landowners are under increasing economic pressure to convert their land to development as populations grow and industries expand. Maintaining local economic uses and technical resources that help individuals keep their land in forests is crucial to maintaining or expanding the amount of forestland on the Eastern Shore. Thus the concern for the economic effects of this plan, and the value of these forests for transferring technical knowledge to other owners are both central to the management of Chesapeake Forest Lands. By maintaining these working landscapes and contributing to the timber industry, local markets and infrastructure (logging crews, mills, etc.) will be available to private landowners thus reducing the need to convert land to other uses.